

§ 94.8

40 CFR Ch. I (7–1–08 Edition)

plug when not in use. Equivalent connections are allowed. Engine manufacturers may comply with this requirement by providing vessel manufacturers with clear instructions explaining how to meet this requirement, and noting in the instructions that failure to comply may subject the vessel manufacturer to federal penalties. Vessel manufacturers are required to comply with the engine manufacturer's instructions.

(e) Electronically controlled engines subject to the emission standards of this part shall broadcast on engine's controller area networks engine torque (as percent of maximum torque at that speed) and engine speed.

[64 FR 73331, Dec. 29, 1999, as amended at 67 FR 68341, Nov. 8, 2002; 68 FR 9782, Feb. 28, 2003]

§ 94.8 Exhaust emission standards.

(a) The Tier 1 standards of paragraph (a)(1) of this section apply until re-

placed by the standards of paragraph (a)(2) of this section.

(1) *Tier 1 standards.* NO_x emissions from model year 2004 and later engines with displacement of 2.5 or more liters per cylinder may not exceed the following values:

(i) 17.0 g/kW-hr when maximum test speed is less than 130 rpm.

(ii) $45.0 \times N^{-0.20}$ when maximum test speed is at least 130 but less than 2000 rpm, where N is the maximum test speed of the engine in revolutions per minute.

(NOTE: Round speed-dependent standards to the nearest 0.1 g/kW-hr.)

(iii) 9.8 g/kW-hr when maximum test speed is 2000 rpm or more.

(2) *Tier 2 standards.* (i) Exhaust emissions from marine compression-ignition engines shall not exceed the applicable Tier 2 exhaust emission standards contained in Table A-1 as follows:

TABLE A-1—PRIMARY TIER 2 EXHAUST EMISSION STANDARDS (G/KW-HR)

Engine Size liters/cylinder, rated power	Category	Model year ^a	THC+NO _x g/kW-hr	CO g/kW-hr	PM g/kW-hr
disp. <0.9 and power ≥37 kW ..	Category 1, Commercial	2005	7.5	5.0	0.40
	Category 1, Recreational	2007	7.5	5.0	0.40
0.9 ≤ disp. <1.2 all power levels.	Category 1, Commercial	2004	7.2	5.0	0.30
	Category 1, Recreational	2006	7.2	5.0	0.30
1.2 ≤ disp. <2.5 all power levels.	Category 1, Commercial	2004	7.2	5.0	0.20
	Category 1, Recreational	2006	7.2	5.0	0.20
2.5 ≤ disp. <5.0 all power levels.	Category 1, Commercial	2007	7.2	5.0	0.20
	Category 1, Recreational	2009	7.2	5.0	0.20
5.0 ≤ disp. <15.0 all power levels.	Category 2	2007	7.8	5.0	0.27
15.0 ≤ disp. <20.0 power <3300 kW.	Category 2	2007	8.7	5.0	0.50
15.0 ≤ disp. <20.0 power ≥3300 kW.	Category 2	2007	9.8	5.0	0.50
20.0 ≤ disp. <25.0 all power levels.	Category 2	2007	9.8	5.0	0.50
25.0 ≤ disp. <30.0 all power levels.	Category 2	2007	11.0	5.0	0.50
disp. ≥30.0 all power levels	Category 3	See paragraph (a)(2)(ii) of this section			

^aThe model years listed indicate the model years for which the specified standards start.

(ii) EPA has not finalized Tier 2 standards for Category 3 engines. EPA will promulgate final Tier 2 standards for Category 3 engines on or before December 17, 2009.

(b) Exhaust emissions of oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter (and other compounds, as applicable) shall be meas-

ured using the procedures set forth in subpart B of this part.

(c) In lieu of the THC+NO_x standards, and PM standards specified in paragraph (a) of this section, manufacturers may elect to include engine families in the averaging, banking, and trading program, the provisions of which are specified in subpart D of this

part. The manufacturer shall then set a family emission limit (FEL) which will serve as the standard for that engine family. The ABT provisions of subpart D of this part do not apply for Category 3 engines.

(d)(1) Naturally aspirated engines subject to the standards of this section shall not discharge crankcase emissions into the ambient atmosphere.

(2) For engines using turbochargers, pumps, blowers, or superchargers for air induction, if the engine discharges crankcase emissions into the ambient atmosphere in use, these crankcase emissions shall be included in all exhaust emission measurements. This requirement applies only for engines subject to hydrocarbon standards (*e.g.*, THC standards, NMHC standards, or THC+NO_x standards).

(3) The crankcase requirements of this paragraph (d) do not apply for Tier 1 engines.

(e) Exhaust emissions from Category 1 and Category 2 propulsion engines subject to the standards (or FELs) in paragraph (a), (c), or (f) of this section shall not exceed:

(1) *Commercial marine engines.* (i) 1.20 times the applicable standards (or FELs) when tested in accordance with the supplemental test procedures specified in § 94.106 at loads greater than or equal to 45 percent of the maximum power at rated speed or 1.50 times the applicable standards (or FELs) at loads less than 45 percent of the maximum power at rated speed.

(ii) As an option, the manufacturer may choose to comply with limits of 1.25 times the applicable standards (or FELs) when tested over the whole power range in accordance with the supplemental test procedures specified in § 94.106, instead of the limits in paragraph (e)(1)(i) of this section.

(2) *Recreational marine engines.* (i) 1.20 times the applicable standards (or FELs) when tested in accordance with the supplemental test procedures specified in § 94.106 at loads greater than or equal to 45 percent of the maximum power at rated speed and speeds less than 95 percent of maximum test speed, or 1.50 times the applicable standards (or FELs) at loads less than 45 percent of the maximum power at rated speed, or 1.50 times the applicable standards (or FELs) at any loads for speeds greater than or equal to 95 percent of the maximum test speed.

(ii) As an option, the manufacturer may choose to comply with limits of 1.25 times the applicable standards (or FELs) when tested over the whole power range in accordance with the supplemental test procedures specified in § 94.106, instead of the limits in paragraph (e)(2)(i) of this section.

(f) The following define the requirements for low-emitting Blue Sky Series engines:

(1) *Voluntary standards.* (i) Category 1 and Category 2 engines may be designated “Blue Sky Series” engines by meeting the voluntary standards listed in Table A-2, which apply to all certification and in-use testing:

TABLE A-2—VOLUNTARY EMISSION STANDARDS [g/kW-HR]

Rated brake power (kW)	THC+NO _x	PM
Power ≥ 37 kW, and displ. < 0.9	4.0	0.24
0.9 ≤ displ. < 1.2	4.0	0.18
1.2 ≤ displ. < 2.5	4.0	0.12
2.5 ≤ displ. < 5	5.0	0.12
5 ≤ displ. < 15	5.0	0.16
15 ≤ disp. < 20, and power < 3300 kW	5.2	0.30
15 ≤ disp. < 20, and power ≥ 3300 kW	5.9	0.30
20 ≤ disp. < 25	5.9	0.30
25 ≤ disp. < 30	6.6	0.30

(ii) Category 3 engines may be designated “Blue Sky Series” engines by meeting these voluntary standards that would apply to all certification and in-use testing:

(A) A NO_x standard of $9.0 \times N^{-0.20}$ where N = the maximum test speed of the engine in revolutions per minute (or 4.8 g/kW-hr for engines with maximum test speeds less than 130 rpm).

(NOTE: Round speed-dependent standards to the nearest 0.1 g/kW-hr.)

(B) An HC standard of 0.4 g/kW-hr.

(C) A CO standard of 3.0 g/kW-hr.

(2) *Additional standards.* Blue Sky Series engines are subject to all provisions that would otherwise apply under this part.

(3) *Test procedures.* Manufacturers may use an alternate procedure to demonstrate the desired level of emission control if approved in advance by the Administrator.

(g) Standards for alternative fuels. The standards described in this section apply to compression-ignition engines, irrespective of fuel, with the following two exceptions for Category 1 and Category 2 engines:

(1) Engines fueled with natural gas shall comply with NMHC+NO_x standards that are numerically equivalent to the THC+NO_x described in paragraph (a) of this section; and

(2) Engines fueled with alcohol fuel shall comply with THCE+NO_x standards that are numerically equivalent to the THC+NO_x described in paragraph (a) of this section.

[64 FR 73331, Dec. 29, 1999, as amended at 67 FR 68342, Nov. 8, 2002; 68 FR 9782, Feb. 28, 2003; 68 FR 54960, Sept. 19, 2003; 72 FR 68525, Dec. 5, 2007]

§ 94.9 Compliance with emission standards.

(a) The general standards and requirements in § 94.7 and the emission standards in § 94.8 apply to each new engine throughout its useful life period. The useful life is specified both in years and in hours of operation, and ends when either of the values (hours of operation or years) is exceeded.

(1) The minimum useful life is:

(i) 10 years or 1,000 hours of operation for recreational Category 1 engines.

(ii) 10 years or 10,000 hours of operation for commercial Category 1 engines.

(iii) 10 years or 20,000 hours of operation for Category 2 engines.

(iv) 3 years or 10,000 hours of operation for Category 3 engines.

(2) The manufacturer shall specify a longer useful life if the engine is designed to remain in service longer than the applicable minimum useful life without being rebuilt. A manufacturer's

recommended time to remanufacture/rebuild longer than the minimum useful life is one indicator of a longer design life.

(3) Manufacturers may request in the application for certification that we approve a shorter useful life for an engine family. We may approve a shorter useful life, in hours of engine operation but not in years, if we determine that these engines will rarely operate longer than the shorter useful life. If engines identical to those in the engine family have already been produced and are in use, the demonstration must include documentation from such in-use engines. In other cases, the demonstration must include an engineering analysis of information equivalent to such in-use data, such as data from research engines or similar engine models that are already in production. The demonstration must also include recommended overhaul intervals, any mechanical warranty offered for the engine or its components, and any relevant customer design specifications. The demonstration may include any other relevant information. The useful life value may not be shorter than any of the following:

(i) 1,000 hours of operation.

(ii) The recommended overhaul interval.

(iii) The mechanical warranty for the engine.

(b) Certification is the process by which manufacturers apply for and obtain certificates of conformity from EPA, which allows the manufacturer to introduce into commerce new marine engines for sale or use in the U.S.

(1) Compliance with the applicable emission standards by an engine family shall be demonstrated by the certifying manufacturer before a certificate of conformity may be issued under § 94.208. Manufacturers shall demonstrate compliance using emission data, measured using the procedures specified in Subpart B of this part, from a low hour engine. A development engine that is equivalent in design to the marine engines being certified may be used for Category 2 or Category 3 certification.

(2) The emission values to compare with the standards shall be the emission values of a low hour engine, or a